In-Class Worksheet 5: Fun with The Pumping Lemma

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1 Pumping Lemma

Prove, using the pumping lemma, that the following languages are not regular:

- {w | w has an twice as many 1s as 0s}
- (Σ = {0,1,2}) {0^n 1^m 2^k | where m must be bigger than n or k}
- {m+n=k| m,n,k are all binary numbers and m + n = k *as numbers*} (Note that in this problem Σ = {0,1,+,=})

Then write down a couple of languages and either define a DFA, NFA, or RegExp for them **or** prove they're not regular.